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	Commenter	Section # and Page #	Comment	Suggested Change and Rationale	Disposition
1.	Bernie Newman, ACA	3.a, page 1	The term "application" is broad and is not used in the AS6296 to describe the functional aspects that would be covered by this AS.	In sentence starting "This TSO covers", replace "application" with "functional". In sentence starting "Specific applications", replace "applications" with "functional requirements"	Accepted. Paragraph 3.a. has been changed to the following, " This TSO's standards apply to equipment intended for use as an electronic display in the flight deck by the flight crew in 14 CFR Part 23, 25, 27, and 29 aircraft. This TSO covers basic display standards (SAE/AS8034B) and specific displayed functions requirements (SAE/AS6296). Specific displayed functions can include, but are not limited to, flight instrumentation, navigation, engine and system status, alerting, surveillance, communication, terrain awareness, weather, and/or other displays. This TSO does not provide standards for head-up displays. Two functions covered within SAE/AS6296 are required as a minimum. This TSO does not address sensor requirements. This TSO does not address the display of single function equipment (e.g., airspeed). Sensor requirements

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					and single function equipment requirements are located in their respective TSO."
2.	Bernie Newman, ACA	3.a, page 1	Sentence starting "Two functions" should be qualified with the where they come from, specifically AS6296	Replace "Two functions are required" with "Two functions identified in AS6296" are required"	Accepted. See response to comment 1.
3.	Bernie Newman, ACA	3.b, page 2	The sentence starting "Document the loss" is taken from C-113a, but a suggested improvement would be to bring in the notion of Design Assurance Level as has been done for recent TSO's such as C-194 or C-198 which introduce the topic of design assurance level.	Rationale: This TSO is specifically aimed at EFIS, so doesn't have quite the broadness of TSO-C113a. Suggestion: Replace the sentence starting "Document the loss" with one of the two following forms: "Develop the equipment to, at least, the design assurance level equal to the failure condition classification due to loss of function and malfunction." Or (preferred): "You may utilize the functional hazard assessment process outlined in SAE ARP 4761, *Guidelines and Methods for Conducting the Safety Assessment Process on Civil Airborne Systems and*	Not accepted. The language used in paragraph 3.b is boilerplate and consistent with Order 8150.1C.

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				Equipment, to determine the appropriate failure condition classification. Document the failure condition classification for which the equipment is designed in accordance with paragraph 5.a.(4) of this TSO." Note, that for the second form, there is also a need to add another item in section 5.a.	
4.	Bernie Newman, ACA	3.e, page 2	The AC20-115C allows for the possibility of any past version of 178 (see e.g. 9.b(8)). Revise to better account for the usage of previous versions of DO-178C.	Rationale: AC20-115C provides guidance for use of 178B, as well as what are termed legacy systems using earlier versions than 178B. Suggestion: Replace the sentence starting "You may also develop…" with "You may also develop the software to earlier versions of RTCA Inc. document RTCA/DO-178, if you follow the guidance of … etc"	Not accepted. The language in the TSO is the interim boilerplate language until order 8150.1D is published. You may request to deviate to an older version of RTCA/DO-178 but it is strongly encouraged that you use RTCA/DO-178B or C.
5.	Bernie Newman, ACA	3.f	The words "RTCA, Inc. Document RTCA/DO-254" do not need to be italicized.	Rationale: minor typo, for consistency. Remove italics.	Accepted. The italics were changed to normal font.
6.	Bernie Newman, ACA	4.b	14CFR45.15(b) and AS6296 allow either manufacturer's name or trademark. Similar allowance should exist in the TSO.	Rationale: although it's consistent with the C-113a, it is preferred to be consistent with the cited 14CFR and AS6296.	Not accepted. Paragraph 4.a states, "Mark at least one major component

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				Suggestion: Replace "name" with "name or trademark or symbol"	permanently and legibly with all the information in 14 CFR § 45.15(b) and paragraph 3.14 of SAE/AS6296." This allows the manufacturer to mark a major component with the name, trademark or symbol. Marking requirements in Paragraph 4.b are for components that are easily removable (without hand tools) and for subassemblies of the article that you determined may be interchangeable.
7.	Bernie Newman, ACA	5.a.(4)	If the suggested change of comment #3 is adopted, then add the need to identify the analyzed failure condition classification.	Rationale: for consistency with suggested replacement text of comment #3. Suggestion: In 5.a(4) add a new "(d) Failure condition classification"	Not accepted. Comment 3 was not accepted.
8.	Bernie Newman, ACA	6.g, page 5	Related to comment #4, the AC20-115C allows for the possibility of more than just 178B or 178C. Revise to account for legacy systems using earlier versions of that guidance.	Rationale: to be consistent with the suggestion in comment #4. Suggestion: Replace "RTCA/DO-178B or RTCA/DO-178C" with "RTCA/DO-178C, or earlier" Replace: "including all data supporting the applicable objectives in RTCA/DO-178B Annex A, *Process Objectives and Outputs by Software Level*."	Not accepted. Comment 4 was not accepted.

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				With the admittedly unwieldy: "including all data supporting the applicable objectives of RTCA/DO-178C or RTCA/DO-178B Annex A, *Process Objectives and Outputs by Software Level*" or where earlier RTCA/DO-178 is used, the data of Figure 8-1 *Software Documentation to Support Regulatory Approval*."	
9.	Honeywell	Section 3 Page 1	Specific requirements are defined for Section's 4 and 5 of AS8034B and AS6296 later in the document. To remove ambiguity and the possibility of interpretations that the AS8034B and AS6296 Section 3 general standards are not required, add clarification.	In first paragraph of Section 3, insert "general standards, " Between "MOPS" and "qualification and documentation requirements".	Accepted. To remove any ambiguity, sections 3 and 4 of SAE/AS6296 were added to paragraph 3. Section 4 of AS8034B was also added.
10.	Garmin	3 Page 1	This TSO invokes AS 8034B, which is currently already specified by TSO-C113a.	Suggest removing reference to AS 8034B as this is already covered in a separate TSO. Additionally, suggest explaining how this TSO and TSO-C113a are related. For example, TSO-C195b paragraph 3.a.(4) includes "Class A and B equipment authorized under this TSO must comply with TSO-	Not accepted. The note in paragraph 3 explains how the two documents are related. It states, "The hardware, physical, and optical (ocular) requirements of EFIS displays are addressed in SAE AS8034B. The EFIS display requirements, for a broad set of aircraft functions,

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				C165a, Electronic Map Display Equipment for Graphical Depiction of Aircraft Position (Own-Ship) when implementing Surface Applications. This TSO shall take precedence where it differs from TSO-C165a."	are addressed in SAE/AS6296."
11.	Garmin	3 Page 1	The paragraph references the entire documents of AS 6296 and AS 8034B, but section 3.c only references section 4 of each document.	Revise this section to clarify that only section 4 applies. For example, section 3 of TSO-C113a specifies only section 4 of AS 8034B.	Partially Accepted. To remove any ambiguity, sections 3 and 4 of SAE/AS6296 was added to paragraph 3. Section 4 of AS8034B was also added.
12.	Garmin	3.a Page 1	"This TSO is not intended to address the display of single function equipment (e.g., airspeed). Two functions are required as a minimum." Clarification is needed on "functions".	Suggest revising to "… At least two of the EFIS functions included in SAE/AS6296 are required in order for an applicant to obtain TSOA for this TSO. See SAE/AS6296 section 3.14.1 for more details on the "Declaration of EFIS Functions".	Accepted. Paragraph 3.a. has been changed to the following, " This TSO's standards apply to equipment intended for use as an electronic display in the flight deck by the flight crew in 14 CFR Part 23, 25, 27, and 29 aircraft. This TSO covers basic display standards (SAE/AS8034B) and specific displayed functions requirements (SAE/AS6296). Specific displayed functions can include, but are not limited to, flight instrumentation, navigation, engine and system status, alerting, surveillance,

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					communication, terrain awareness, weather, and/or other displays. This TSO does not provide standards for head-up displays. Two functions covered within SAE/AS6296 are required as a minimum. This TSO does not address sensor requirements. This TSO does not address the display of single function equipment (e.g., airspeed). Sensor requirements and single function equipment requirements are located in their respective TSO."
13.	Garmin	3.f Page 2	Including this specific DO-254 reference is redundant to the rest of the paragraph in this section. For custom airborne electronic hardware determined to be simple, RTCA/DO-254, paragraph 1.6 applies. DO-254 makes it clear how to address "simple" custom airborne electronic hardware.	Remove this reference to DO-254 Paragraph 1.6.	Not accepted. The language used in the TSO is boilerplate and consistent with Order 8150.1C.
14.	Garmin	4.a. Page 2	Marking requirements of SAE/AS 6296 reference section 3.15 of the standard. There is no section 3.15.	Change to 3.14. Section 3.14 provides identification requirements.	Accepted. The paragraph reference has been changed to 3.14.
15.	Garmin	4.a. Page 2	Section 3.14.d of SAE/AS 6296 (the assumed referenced section of 4.a in the TSO) includes the statement to mark the unit	Exclude section 3.14.d in paragraph 4.a of the TSO.	Not accepted. SAE/AS 6296 3.14d states that

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			with: "See Installation Manual (IM) for Declared EFIS Functions", or equivalent, on the primary (most prominent) component of the EFIS. The Order 8150.1C TSO template does not include a statement similar to this phrase.	Garmin is routinely granted deviations from TSO requirements to mark the equipment with lengthy text as the equipment does not have sufficient space to include this as well as all other required markings (e.g., multiple TSOs and SW level, etc. that appear in other TSOs). This deviation is granted through use of a marking similar to the example in Order 8150.1C ¶ 7-4.e.(4).(b) "See Inst Mnl for Addtl TSO approvals and/or markings.").	an equivalent marking is acceptable in lieu of marking, "See Installation Manual (IM) for Declared EFIS Functions." For example, marking the equipment with "See IM for EFIS Functions" is equivalent. This information is necessary because the TSO allows multiple functions to be displayed. One must know the functions your equipment is providing.
16.	Garmin	4.b.(2) Page 3	Paragraph 4.b.(2) states: Each subassembly of the article that you determined may be interchangeable. This language is confusing.	The language for this requirement is confusing. This could mean that a stuffed printed circuit board needs the TSO number. Suggest removing the statement or if removing causes problems, work with industry to establish wording that is better understood.	Not accepted. The language used is boilerplate and consistent with Order 8150.1C.
17.	Garmin	5.a.(4)(c) Page 3	Paragraph 5.a.(4)(c) states: (4) For each unique configuration of software and airborne electronic hardware, reference the following: (c) Functional description.	Reword 5.a.(4)(c) to state: (4) For each **range** of software and/**or** airborne electronic hardware, reference the following:	Not accepted. The language used is boilerplate and consistent with Order 8150.1C.

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			This language is vague and potentially difficult to comply with when considering Appendix A of SAE AS 6296. Many manufacturers will list a range of SW and AEH part numbers that are compatible and approved versus showing each unique configuration of SW and AEH that can exist. Additionally, EFIS functionality may be added in subsequent releases of SW and/or AEH which can cause a large amount of data necessary to be shown in the manual that can easily be reduced to a few data sets.	(c) Functional description.	
18.	Garmin	5.f Page 4	TSO paragraph 5.f and its subparagraphs include definition of non-TSO functions and the data to be submitted to the ACO for non-TSO functions. This guidance is inconsistent with Order 8110.4C CHG 4.	TSO paragraph 5.f states "Identify functionality or performance contained in the article not evaluated under paragraph 3 of this TSO (that is, non-TSO functions)." Use of the term "performance" in the definition of a non-TSO function is inconsistent with the Order 8110.4C CHG 4 paragraph 6-9.b.(1) and 6-9.b.(3)(a) guidance regarding how to define a non-TSO function. The issue is non-TSO should not be defined as "performance". It will create difficulty if these criteria are used. For example, if a TSO requires a minimum 10 watt transmitter and a company makes equipment that is robust	Not Accepted. Order 8110.4C (Chg 5 incorporated) para 6-9.b.(1) defines a non-TSO function as "one that is not covered by a TSO-approved minimum performance standard (MPS), does not support or affect the hosting article's TSO function(s), and could technically be implemented outside of the TSO article." Furthermore, Para 6.9.b.(3)(b) of the order requires manufacturers to submit the manufacturer's declared performance requirements for the non-

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				at 11 watts, the performance exceeding the TSO is not called out under the TSO; consequently, by the paragraph 5.f "performance" definition, the 11 watt transmitter has a non-TSO 1 watt capability. The distinction of a "function that can be accomplished outside the TSO box" as is specified in Order 8110.4C CHG 4 paragraph 6-9 is critical to making non-TSO function work long term. Adjust the wording in the TSO (and template) to be consistent with the 8110.4C CHG 4 intent.	TSO function(s). It is these aspects of "functionality or performance" that the TSO template language refers to here. In the example the commenter gives, as the commenter identifies, an 11-watt transmitter that must output a minimum of 10 watts does not have 1 watt of "non-TSO function", since transmitter power is covered by the MPS and since that extra watt cannot be implemented outside the TSO article. Rather, it simply meets the TSO minimum performance standard, with a 1-watt margin above the minimum. As such, we do not view the referenced template language as inconsistent with Order 8110.4C requirements. No change necessary.
19.	Garmin	6.g Page 5	There is a second reference to DO-178B but not DO-178C. It would seem that Annex A of DO-178C would be appropriate if DO-178C were being used.	The second reference to DO-178B should be expanded to "RTCA/DO-178B or RTCA/DO-178C".	Accepted. Added the second reference to RTCA/DO-178C in paragraph 6.g.

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20.	Garmin	7.b Page 6	TSO paragraph 7.b contains wording that is inconsistent with Order 8110.4C CHG 5.	TSO paragraph 7.b includes additional guidance about what furnished data should be provided to an operator or repair station when the equipment includes a non-TSO function. The problematic guidance states "include one copy of the data in paragraphs 5.f.(1) through 5.f.(4)." This guidance is inconsistent with Order 8110.4C CHG 4. Order 8110.4C CHG 4 paragraph 6-9.b.(6) defines the FAA-industry agreed data that must be provided to an installer when equipment includes a non-TSO function.	Not Accepted. The language and policy detailed in paragraph 5.f is standardized per FAA Order 8150.1C and represents the FAA's current policy on non-TSO functions.
21.	Rockwell Collins France	3.a	In case of display of single function equipment, what are the standards to be addressed? For the cited Airspeed example, the proposed text implies application of TSO-C2d, which does not address the electronic display technical aspects of an electronic airspeed display and cites superseded DO-178A and DO-160B. Would it be expected that TSO-C2d and TSO-C113a be applied? A similar question could be posed for many singular TSO function applications.	Please provide clarifying text regarding the case of display of a single function, particularly how single function TSO equipment should alternatively be treated (e.g., TSO-C113a + function TSO?)..	Accepted. The following sentence was added to paragraph 3.a, "Sensor requirements and single function equipment requirements are located in their respective TSO."
22.	Rockwell Collins	4.a	Paragraph 3.15 of SAE/AS6296 does not exist	Paragraph 3.14 of SAE/AS6296 should be referenced for	Accepted. The paragraph reference has

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	France			marking.	been changed to 3.14.
23.	Rockwell Collins-CR	3.0	This section states that new models of EFIS equipment must meet the MPS qualification and documentation requirements of SAE AS6296 and SAE AS8034B. It is not clear whether the TSO applicant would be required to show compliance to <u>both</u> SAE documents <u>in their entirety</u> or only show compliance to certain sections of AS6296 and AS8034B as applicable. For example, Section 3 of TSO-C113a specified that airborne multipurpose electronic displays must meet the MPS qualification and documentation requirements in section 4 of SAE AS8034B along with the color requirements found in Appendix 1 of TSO-C113a.	To avoid confusion by the applicant, please consider identifying the section number(s) within both AS6296 and AS8034B and any applicable unique color requirements that apply to Section 3 of the draft EFIS Display TSO.	Partially Accepted. To remove any ambiguity, sections 3 and 4 of SAE/AS6296 were added to paragraph 3. Section 4 of AS8034B was also added.
24.	THALES Avionics SAS	Section 3, p.1	As mentioned in the TSO C-EFIS section 3(a): *"this TSO is not intended to address the display of single function equipment (e.g., airspeed). Two functions are required as a minimum."* List of functions covered by this TSO with link to SAE AS 6296 and appropriate applicable AS sections should be added in section 3, based on list given in Appendix A (A.2) of SAE AS 6296 with some updates (*). This approach should be equivalent to the one of TSO C165a (for example) which includes in section 3 (Table 1) functional	Table should be added in Section 3 of TSO C-EFIS with List of functions and applicable SAE AS 6296 sections for each function (refer to SAE AS 6296 Appendix A.2). *(* Refer to text proposal in Table 1 below of this comment form)*	Not Accepted. The legacy TSOs/MPS/MOPS are provided as a reference via the Declaration of EFIS Functions Form provided in SAE/AS6296.

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			description and applicable MPS requirements for EMD equipment. All these functions are not necessary implemented but minimum two over the list.		
25.	THALES Avionics SAS	Section 4(a), p.2	Section 3.15 of SAE AS 6296 does not exist.	Replace reference with reference to section 3.14 of SAE AS 6296 which addresses Identification.	Accepted. The paragraph reference has been changed to 3.14.
26.	THALES Avionics SAS	Section 5(f)(3)	Wording "continued performance" usually used in last published TSOs should be clarified.	Additional Note with definition of "continued performance" should be added.	Not Accepted. The language used is boilerplate and consistent with Order 8150.1C
27.	Boeing	Page: 1 Para: 3.a.	*The proposed text states:* a. **Functionality**. This TSO's standards apply to equipment intended for use as an electronic display in the flight deck by the flight crew in 14 CFR Part 23, 25, 27, and 29 aircraft. This TSO covers basic display standards (SAE/AS8034B) and specific application requirements (SAE/AS6296). Specific applications can include, but are not limited to, flight instrumentation, navigation, engine and system status, alerting, surveillance, communication, terrain awareness, weather, and other displays. This TSO does not provide standards for head-up displays. This TSO is not intended to address the display of single function equipment (e.g., airspeed). Two functions are required as a minimum. *We suggest revising the text as follows:*	The paragraph insinuates that the new TSO could be used in lieu of multiple individual TSOs for (airspeed, altitude, etc.), but SAE/AS6296 explicitly excludes sensors in its coverage.	Accepted. Paragraph 3.a. has been changed to the following, " This TSO's standards apply to equipment intended for use as an electronic display in the flight deck by the flight crew in 14 CFR Part 23, 25, 27, and 29 aircraft. This TSO covers basic display standards (SAE/AS8034B) and specific displayed functions requirements (SAE/AS6296). Specific displayed functions can include, but are not limited to, flight instrumentation, navigation, engine and system status, alerting, surveillance, communication, terrain

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			Add a statement clarifying whether or not the TSO is intended to cover integrated sensors (e.g. pitot/static pressure sensors in an integrated airspeed/altitude display).		awareness, weather, and/or other displays. This TSO does not provide standards for head-up displays. Two functions covered within SAE/AS6296 are required as a minimum. This TSO does not address sensor requirements. This TSO does not address the display of single function equipment (e.g., airspeed). Sensor requirements and single function equipment requirements are located in their respective TSO."
28.	Boeing	General	*We recommend revising the text as follows:* Add an appendix describing color requirements, as was done in TSO-C113a (Table A1 and Table A2).	An appendix for color-coded requirements was added to TSO-C113a. This new TSO appears to be similar to C113a with the addition of "specific application requirements" coverage.	Not accepted. We will consider adding color requirements in the next revision of the TSO and/or SAE/AS6296. This requirement was not in the scope of TSO or MPS.
29.	AIRBUS	4. MARKING PAGE 2	In the following sentence, "paragraph 3.15 of SAE/AS6296" does not exist. (a) Mark at least one major component permanently and legibly with all the information in 14 CFR § 45.15 (b) and paragraph 3.15 of SAE / AS6296.	"Paragraph 3.15 of SAE/AS6296" should be replaced by "paragraph 3.14 of SAE/AS6296.	Accepted. The paragraph reference has been changed to 3.14.

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30.	GAMA	3 Page 1	This TSO invokes AS 8034B, which is currently already specified by TSO-C113a.	Suggest removing reference to AS 8034B as this is already covered in a separate TSO. Additionally, suggest explaining how this TSO and TSO-C113a are related. For example, TSO-C195b paragraph 3.a.(4) includes "Class A and B equipment authorized under this TSO must comply with TSO-C165a, Electronic Map Display Equipment for Graphical Depiction of Aircraft Position (Own-Ship) when implementing Surface Applications. This TSO shall take precedence where it differs from TSO-C165a."	Not accepted. The note in paragraph 3 explains how the two documents are related. It states, "The hardware, physical, and optical (ocular) requirements of EFIS displays are addressed in SAE AS8034B. The EFIS display requirements, for a broad set of aircraft functions, are addressed in SAE/AS6296."
31.	GAMA	3 Page 1	The paragraph references the entire documents of AS 6296 and AS 8034B, but section 3.c only references section 4 of each document.	Revise this section to clarify that only section 4 applies. For example, section 3 of TSO-C113a specifies only section 4 of AS 8034B.	Partially Accepted. To remove any ambiguity, sections 3 and 4 of SAE/AS6296 was added to paragraph 3. Section 4 of AS8034B was also added.
32.	GAMA	3.a, page 1	The term "application" is broad and is not used in the AS6296 to describe the functional aspects that would be covered by this AS.	In sentence starting "This TSO covers", replace "application" with "functional". In sentence starting "Specific applications", replace "applications" with "functional requirements"	Accepted. Paragraph 3.a. has been changed to the following, " This TSO's standards apply to equipment intended for use as an electronic display in the flight deck by the flight crew in

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					14 CFR Part 23, 25, 27, and 29 aircraft. This TSO covers basic display standards (SAE/AS8034B) and specific displayed functions requirements (SAE/AS6296). Specific displayed functions can include, but are not limited to, flight instrumentation, navigation, engine and system status, alerting, surveillance, communication, terrain awareness, weather, and/or other displays. This TSO does not provide standards for head-up displays. Two functions covered within SAE/AS6296 are required as a minimum. This TSO does not address sensor requirements. This TSO does not address the display of single function equipment (e.g., airspeed). Sensor requirements and single function equipment requirements are located in their respective TSO."
33.	GAMA	3.a, page 1	Sentence starting "Two functions" should be qualified with the where they come from, specifically AS6296	Replace "Two functions are required" with "Two functions identified in AS6296" are required"	Accepted. See comment 32 for new language.
34.	GAMA	3.b, page 2	The sentence starting "Document the loss" is taken from C-113a, but a suggested improvement would be to bring in the notion	Rationale: This TSO is specifically aimed at EFIS, so doesn't have quite the broadness	Not accepted. The language used in paragraph

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			of Design Assurance Level as has been done for recent TSO's such as C-194 or C-198 which introduce the topic of design assurance level.	of C-113a. Suggestion: Replace the sentence starting "Document the loss" with one of the two following forms: "Develop the equipment to, at least, the design assurance level equal to the failure condition classification due to loss of function and malfunction." Or (preferred): "You may utilize the functional hazard assessment process outlined in SAE ARP 4761, Guidelines and Methods for Conducting the Safety Assessment Process on Civil Airborne Systems and Equipment, to determine the appropriate failure condition classification. Document the failure condition classification for which the equipment is designed in accordance with paragraph 5.a.(4) of this TSO." Note, that for the second form, there is also a need to add another item in section 5.a.	3.b is boilerplate and consistent with Order 8150.1C.
35.	GAMA	3.f	The words "RTCA, Inc. Document RTCA/DO-254" do not need to be italicized.	Rationale: minor typo, for consistency. Remove italics.	Accepted. The italics were changed to normal font.

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36.	GAMA	4.a. Page 2	Marking requirements of SAE/AS 6296 reference section 3.15 of the standard. There is no section 3.15.	Change to 3.14. Section 3.14 provides identification requirements.	Accepted. The paragraph reference has been changed to 3.14.
37.	GAMA	4.a. Page 2	Section 3.14.d of SAE/AS 6296 (the assumed referenced section of 4.a in the TSO) includes the statement to mark the unit with: "See Installation Manual (IM) for Declared EFIS Functions", or equivalent, on the primary (most prominent) component of the EFIS. The Order 8150.1C TSO template does not include a statement similar to this phrase.	Exclude section 3.14.d in paragraph 4.a of the TSO. Routinely granted deviations from TSO requirements to mark the equipment with lengthy text as the equipment does not have sufficient space to include this as well as all other required markings (e.g., multiple TSOs and SW level, etc. that appear in other TSOs). This deviation is granted through use of a marking similar to the example in Order 8150.1C ¶ 7-4.e.(4).(b) "See Inst Mnl for Addtl TSO approvals and/or markings.").	Not accepted. SAE/AS 6296 3.14d states that an equivalent marking is acceptable in lieu of marking, "See Installation Manual (IM) for Declared EFIS Functions." For example, marking the equipment with "See IM for EFIS Functions" is equivalent. This information is necessary because the TSO allows multiple functions to be displayed. One must know the functions your equipment is providing.
38.	GAMA	4.b	14CFR45.15(b) and AS6296 allow either manufacturer's name or trademark. Similar allowance should exist in the TSO.	Rationale: although it's consistent with the C-113a, it is preferred to be consistent with the cited 14CFR and AS6296. Suggestion: Replace "name" with "name or trademark or symbol"	Not accepted. Paragraph 4.a states, "Mark at least one major component permanently and legibly with all the information in 14 CFR § 45.15(b) and paragraph 3.14 of SAE/AS6296." This allows the manufacturer to mark a major component with the name, trademark or symbol. Marking requirements in Paragraph 4.b

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					are for components that are easily removable (without hand tools) and for subassemblies of the article that you determined may be interchangeable.
39.	GAMA	5.a.(4)	If the suggested change of comment #3 is adopted, then add the need to identify the analyzed failure condition classification.	Rationale: for consistency with suggested replacement text of comment #3. Suggestion: In 5.a(4) add a new "(d) Failure condition classification"	Not accepted. Comment 3 (38) was not accepted.
40.	GAMA	5.a.(4)(c) Page 3	Paragraph 5.a.(4)(c) states: (4) For each unique configuration of software and airborne electronic hardware, reference the following: (c) Functional description. This language is vague and potentially difficult to comply with when considering Appendix A of SAE AS 6296. Many manufacturers will list a range of SW and AEH part numbers that are compatible and approved versus showing each unique configuration of SW and AEH that can exist. Additionally, EFIS functionality may be added in subsequent releases of SW and/or AEH which can cause a large amount of data necessary to be shown in the manual that can easily be reduced to a few data sets.	Reword 5.a.(4)(c) to state: (4) For each **range** of software and**/or** airborne electronic hardware, reference the following: (c) Functional description.	Not accepted. The language used is boilerplate and consistent wi Order 8150.1C.
41.	GAMA	5.f Page 4	TSO paragraph 5.f and its subparagraphs include definition of non-TSO functions and the data to be submitted to the ACO for non-	TSO paragraph 5.f states "Identify functionality or performance contained in the	Not Accepted. Order 8110.4C (Chg 5

Comment [LRV1]: Why not accept?

I didn't accept this because the boilerplate language uses "unique configuration" and "and". If you want me to change I will.

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			TSO functions. This guidance is inconsistent with Order 8110.4C CHG 4.	article not evaluated under paragraph 3 of this TSO (that is, non-TSO functions)." Use of the term "performance" in the definition of a non-TSO function is inconsistent with the Order 8110.4C CHG 4 paragraph 6-9.b.(1) and 6-9.b.(3)(a) guidance regarding how to define a non-TSO function. The issue is non-TSO should not be defined as "performance". It will create difficulty if these criteria are used. For example, if a TSO requires a minimum 10 watt transmitter and a company makes equipment that is robust at 11 watts, the performance exceeding the TSO is not called out under the TSO; consequently, by the paragraph 5.f "performance" definition, the 11 watt transmitter has a non-TSO 1 watt capability. The distinction of a "function that can be accomplished outside the TSO box" as is specified in Order 8110.4C CHG 4 paragraph 6-9 is critical to making non-TSO function work long term. Adjust the wording in the TSO (and template) to be consistent	incorporated) para 6-9.b.(1) defines a non-TSO function as "one that is not covered by a TSO-approved minimum performance standard (MPS), does not support or affect the hosting article's TSO function(s), and could technically be implemented outside of the TSO article." Furthermore, Para 6.9.b.(3)(b) of the order requires manufacturers to submit the manufacturer's declared performance requirements for the non-TSO function(s). It is these aspects of "functionality or performance" that the TSO template language refers to here. In the example the commenter gives, as the commenter identifies, an 11-watt transmitter that must output a minimum of 10 watts does not have 1 watt of "non-TSO function", since transmitter power is covered by the MPS and since that extra watt cannot be implemented outside the

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				with the 8110.4C CHG 4 intent.	TSO article. Rather, it simply meets the TSO minimum performance standard, with a 1-watt margin above the minimum. As such, we do not view the referenced template language as inconsistent with Order 8110.4C requirements. No change necessary.
42.	GAMA	6.g Page 5	There is a second reference to DO-178B but not DO-178C. It would seem that Annex A of DO-178C would be appropriate if DO-178C were being used.	The second reference to DO-178B should be expanded to "RTCA/DO-178B or RTCA/DO-178C".	Accepted. Added the second reference to RTCA/DO-178C in paragraph 6.g.
43.	GAMA	6.g, page 5	Related to comment #4, the AC20-115C allows for the possibility of more than just 178B or 178C. Revise to account for legacy systems using earlier versions of that guidance.	Rationale: to be consistent with the suggestion in comment #4. Suggestion: Replace "RTCA/DO-178B or RTCA/DO-178C" with "RTCA/DO-178C, or earlier" Replace: "including all data supporting the applicable objectives in RTCA/DO-178B Annex A, Process Objectives and Outputs by Software Level." With the admittedly unwieldy: "including all data supporting the applicable objectives of RTCA/DO-178C or RTCA/DO-178B Annex A, Process Objectives and Outputs by	Not accepted. Comment 4 was not accepted.

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				Software Level" or where earlier RTCA/DO-178 is used, the data of Figure 8-1 Software Documentation to Support Regulatory Approval."	
44.	GAMA	7.b Page 6	TSO paragraph 7.b contains wording that is inconsistent with Order 8110.4C CHG 5.	TSO paragraph 7.b includes additional guidance about what furnished data should be provided to an operator or repair station when the equipment includes a non-TSO function. The problematic guidance states "include one copy of the data in paragraphs 5.f.(1) through 5.f.(4)." This guidance is inconsistent with Order 8110.4C CHG 4. Order 8110.4C CHG 4 paragraph 6-9.b.(6) defines the FAA-industry agreed data that must be provided to an installer when equipment includes a non-TSO function.	Not Accepted. The language and policy detailed in paragraph 5.f is standardized per FAA Order 8150.1C and represents the FAA's current policy on non-TSO functions.

The content below is part of Thales' comment. See comment 24.

(*) Table 1: ***Extract of SAE AS 6296 Appendix A.2 that should be added with additional applicable sections for each function:***

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Function Name	**Applicable Requirements Sections in SAE AS 6296**	Legacy TSO / MOPS (Reference Only)	Declaration (X, C, D, or I)
Airspeed	**Error! Reference source not found.**, 5.1.1, Appendix B	TSO-C2d / AS 8019	
Vertical Velocity (Rate of Climb)	4.1.2, 5.1.2	TSO-C8e / AS 8016A	
Altimeter	4.1.3	TSO-C10b / AS 392C / AS 8009B	
Attitude (Bank and Pitch)	4.1.4	TSO-C4c / AS 396B / AS 8001	
Direction Indicator	4.1.5	TSO-C5f / AS 8021 TSO-C6e / AS 8013A	
Max Allowable Airspeed	4.1.6	TSO-C46a / TSO-C46a	
Mach	4.1.7	TSO-C95a / AS 8018	
Turn and Slip	4.1.8	TSO-C3e / AS 8004	
Airborne Low-Range Radio Altimeter	4.1.9	TSO-C87a / ED-30	
Automatic Flight Guidance and Control System	4.1.10, 5.1.5	TSO-C198 / DO-325	
Very High Frequency Omnidirectional Range (VOR)	4.2.1	TSO-C40c / DO-196	
Distance Measuring Equipment (DME)	4.2.2	TSO-C66c / DO-189	
Localizer	4.2.3	TSO-C36e / DO-195	
Glideslope	4.2.4	TSO-C34e / DO-192	
Marker Beacon	4.2.5	TSO-C35d / DO-143	
Automatic Direction Finding (ADF)	4.2.6	TSO-C41d / DO-179	

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Function Name	**Applicable Requirements Sections in SAE AS 6296**	Legacy TSO / MOPS (Reference Only)	Declaration (X, C, D, or I)
Stand-Alone Airborne Navigation Equipment Using the Global Positioning System Augmented By The Satellite Based Augmentation System	4.2.7	TSO-C146c / DO-229D	
Flight Management System using Multi-sensor Inputs	4.2.8	TSO-C115c / DO-283A	
Microwave Landing System	4.2.9	TSO-C104 / DO-177	
VHF Radio	4.2.10	TSO-C169a / DO-186B	
HF Radio	4.2.11	TSO-C170 / DO-163	
Temperature*	4.3.1	TSO-C43c / AS 8005	
Fuel Flow*	4.3.2	TSO-C44d / AS 407C	
Manifold Pressure	4.3.3, 5.1.3	TSO-C45b / AS 8042	
Fuel, Oil, and Hydraulic Pressure	4.3.4	TSO-C47a / AS 408C	
Tachometer	4.3.5, 5.1.4	TSO-C49b / AS 404B	
Fuel and Oil Quantity	4.3.6	TSO-C55a / AS 405C	
Windshear Warning and Escape Guidance	4.4.1	TSO-C117a / TSO-C117a	
Weather and Ground Mapping Radar	4.4.2	TSO-C63d / DO-173 DO-220	
Airborne Passive Thunderstorm Detection	4.4.3	TSO-C110a / DO-191	
Optional Display Equipment for Weather and Ground Mapping Radar Indicators	4.4.4	TSO-C105 / DO-174	
Terrain Awareness and Ground Proximity*	4.5.1	TSO-C92c / DO-161A TSO-C151b / TSO-C151b	

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Function Name	**Applicable Requirements Sections in SAE AS 6296**	Legacy TSO / MOPS (Reference Only)	Declaration (X, C, D, or I)
Helicopter TAWS	4.5.2	TSO-C194 / DO-309	
Traffic Collision Avoidance System (TCAS I and II)	4.6.1	TSO-C118a / DO-197A TSO-C119d / DO-185B modified and DO-300A modified by the TSO	
Traffic Advisory System	4.6.2	TSO-C147a / DO-197A as modified	

In addition, requirements in Section 3 of SAE AS 6296 are also applicable whatever the function(s).